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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/801,997

03/16/2004

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12/14/2007

EXAMINER

GARRETT, DAWN L

ART UNIT

PAPER NUMBER

1794

MAIL DATE

DELIVERY MODE

12/14/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/801,997	BEGLEY ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Dawn Garrett	1794	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 19 November 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-9, 12-22 and 24-52 is/are pending in the application.
- 4a) Of the above claim(s) 2-5, 9 and 12 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 6-8, 13-22 and 24-52 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

**DETAILED ACTION**

***Response to Amendment***

1. The finality of the Office action mailed August 30, 2007 is withdrawn. The amendment filed November 19, 2007 has been entered. Claims 1, 18, 19, 21, 22, and 42-44 were amended. Claims 10-11 and 23 are canceled. Claims 2-5, 9, and 12 are withdrawn. Applicant previously elected the following species:

Applicant previously elected the following species without traverse:

A naphthacene compound of Formula I where R2 and R4 are aryl and R1, R3, R5, and R6 are alkyl and with the ultimate species = Inv 2 at page 15.

***Claim Objections***

2. Claims 1, 19, 39, 45 and 48 are objected to because of the following informalities:

- a. In claim 1, part ( c ), the period should be deleted at the end of part ( c ) since this is not the end of the claim.
- b. In claim 19, the period after "layer" in part ( c ) should be deleted since this is not the end of the sentence.
- c. Claims 39 and 48 should comprise a period at the end of the claim.
- d. In claim 45 the strikethrough marks in both transistors and TFTs should be removed, since the claim was previously amended. In addition, it appears the "s" at the end of "transistor" and "TFT" should be removed.

Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claim 14 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 14 comprises a formula Inv-21 that appears to be outside of the definition for the naphthacene derivatives of parent claim 1. Inv-21 comprises both a CF<sub>3</sub> and F substituent on the same phenyl ring. Formula (I) does not appear to allow for "R<sub>4</sub>", for instance, to be two different substituents. "R<sub>4</sub>" may be contained in a number of 2, but two substituents, if present, should be the same group.

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1, 6-8, 13-18, 24-33, 41, 42, 46 and 47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsuura et al. (US 5,503,910) in view of Sato et al. (JP 04-335087). Matsuura teaches organic light emitting devices having first and second emitting layers (see abstract). Matsuura teaches a bluish layer and a reddish/yellow layer (see col. 3, lines 11-19). There may be a layer with a hole

transporting material and may emit in the 580nm to 650nm range per the "hole transporting layer" (see col. 3, lines 20-28). The reference teaches rubrene as a dopant (see col.61, bottom compound). The device further includes an electron transporting layer (see col. 66, lines 49-56). The blue layer may comprise a disytryl compound as a dopant (see examples and Table 1) with respect to the limitations in claim 1, part c.

Per claims 15-17, the amount of rubrene compound used in the layer is 0.1-10 mol % (see col. 61, lines 54-58).

Per claim 18, see col. 37-40 for styryl compounds for the blue emitting layer.

The layer comprising the reddish emitting compound (which can be hole transporting as set forth above) is around 40 nm in thickness (see col. 67, lines 35-37) per claim 24.

Per claim 25, a further hole transporting layer may be formed (see Examples, col. 67, lines 19-31).

Per claim 27, the second light emitting layer is around 20 nm in thickness (see col. 67, lines 48-49).

Per claim 28 a hole injecting layer may be formed (see col. 64, lines 21-33).

Per claim 29, CuPc may be included (see col. 65, lines 30-40).

Per claim 30, the thickness may be 1 nm to 10 micrometers (see col. 66, lines 4-6).

Per claim 31, the electron transporting layer may be 1 nm to 10 micrometers (see col. 66, lines 54-56).

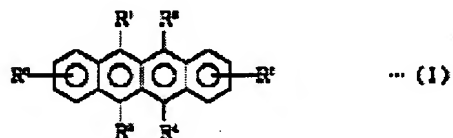
Per claim 32, magnesium and silver alloy cathodes are taught (see col. 68, lines 2-3).

Per claim 33, the cathode may be transparent (see col. 63, lines 17-20).

Per claims 41 and 47, there may be a layer of metal phthalocyanines adjacent the cathode (see col. 66, lines 39-41). Per claim 42, the thickness of such a layer is 1 nm to 10 micrometers (see col. 66, lines 54-56).

Per claim 46, hole transporting material includes arylamines (see col. 64, lines 34-55).

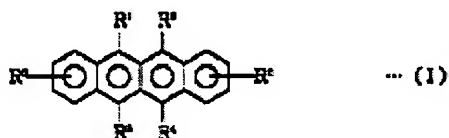
Matsuura is silent with respect to the specific rubrene species currently under consideration, but does teach compounds such as rubrene are appropriate. Sato teaches in analogous art naphthacene derivatives of the following formula for an EL device:



R1-R4 may include alkyl or substituted aromatic hydrocarbon groups and R5 and R6 may include alkyl groups (see abstract). Although Sato fails to specify an aryl group as a possible substituent group for the aromatic hydrocarbon group, aryl groups are well known as substituents. It would have been obvious to one of ordinary skill in the art to have formed the Matsuura device using the rubrene derivatives taught by Sato in place of the rubrene taught in Matsuura, because one would expect the rubrene derivatives to be similarly useful as a light emitting material for the Matsuura device.

7. Claims 19, 20, 35-40, 43, 44, and 49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsuura et al. (US 5,503,910) in view of Sato et al. (JP 04-335087) in further view of Kobori et al. (US 6,285,039). Matsuura teaches organic light emitting devices having first and second emitting layers (see abstract). Matsuura teaches a bluish layer and a reddish/yellow layer (see col. 3, lines 11-19). There may be a layer with a hole transporting material and may emit in the 580nm to 650nm range per the "hole transporting layer" (see col. 3, lines 20-28). The reference teaches rubrene as a dopant (see col.61, bottom compound). The device further includes an electron transporting layer (see col. 66, lines 49-56). The blue layer may comprise a disytryl compound as a dopant (see examples and Table 1).

Matsuura fails to teach the specific rubrene species currently under consideration, but does teach compounds such as rubrene are appropriate. Sato teaches in analogous art naphthacene derivatives of the following formula for an EL device:



R1-R4 may include alkyl or substituted aromatic hydrocarbon groups and R5 and R6 may include alkyl groups (see abstract). Although Sato fails to specify an aryl group as a possible substituent group for the aromatic hydrocarbon group, aryl groups are well known as substituents. It would have been obvious to one of ordinary skill in the art to have formed the Matsuura device using the rubrene derivatives taught by Sato in place

of the rubrene taught in Matsuura, because one would expect the rubrene derivatives to be similarly useful as a light emitting material for the Matsuura device.

Matsuura et al. is silent with respect to including a green light emitting layer per claims 35-40. Kobori et al. teaches in analogous art the inclusion of a light emitting layer comprising a coumarin or quinacridone derivative in order to achieve a multi-color emission device (see abstract, top of column 40, col. 25-26, col. 17-18). Matsuura et al. also is silent with respect to including a color filter per instant claims 43 and 44. Kobori et al. teaches addition of a color filter in a device may optimize the extraction efficiency and color purity (see col. 33, lines 53-56). Matsuura et al. is also silent with respect to adding additional dopants per instant claim 49. Kobori et al. teaches at least two dopants may be contained in a light emitting layer to provide a multi-color emitting device (see abstract). With respect to claim 19 and 20, Kobori teaches the inclusion of known perylene derivatives (see col. 21, lines 21-24). With respect to claim 20, it would be obvious to add alkyl substituents to perylene, because one would not expect the alkyl substitution to affect the functionality of the perylene skeleton significantly. It would have been obvious to one of ordinary skill in the art to have incorporated a green emitting layer, perylene derivative dopants, color filter and/or multiple dopants in the Matsuura et al. device, because Kobori et al. teaches it is known in the art to add these features in order to achieve a device emitting of a desired color with a predictable result.



### ***Double Patenting***

8. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

9. Claims 1, 6-8, 13-22, and 24-52 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-26 and 32-50 of copending Application No. 10/897357. Although the conflicting claims are not identical, they are not patentably distinct from each other because '357 also claims a device comprising a yellow emitting layer and a blue emitting layer that may contain the same compounds. One of the three light emitting layers set forth by '357 encompasses the electron transporting layer set forth in the present application.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

10. Claims 1, 6-8, 13-19, 21-22, and 26, 35-40, and 46 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-12 of U.S. Patent No. 7,288,330. Although the conflicting claims are not identical, they are not patentably distinct from each other because the device of '330 comprises layers having the same required compounds as the instant claims.

***Allowable Subject Matter***

11. Claims 21, 22, 34, 45, 48, and 50-52 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims if the double patenting rejections are overcome. The closest prior art, Matsuura (discussed above), fails to teach the limitations of these claims in combination with the other required limitations.

***Response to Arguments***

12. Applicant's arguments with respect to claims have been considered but are moot in view of the withdrawal of the finality of the last Office action and current rejections.

13. It is further noted for the future consideration of other naphthacene species that Kobori et al. teaches rubrene derivatives in a light emitting layer other than the species currently under consideration.

***Conclusion***

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dawn Garrett whose telephone number is (571) 272-1523. The examiner can normally be reached on Monday through Thursday.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Milton Cano can be reached on (571) 272-1398. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Dawn Garrett/

Dawn Garrett  
Primary Examiner  
Art Unit 1794